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TITLE: LC cpds. for LC displayed and optical shutters - give LC compsns. with improved response to electric field and displays with good response speed with small temp. dependence and high contrast

PRIORITY-DATA: 1993JP-0344693 (December 21, 1993)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>JP 07179856 A</u>	July 18, 1995		037	C09K019/34

INT-CL (IPC): C07 D 213/24; C07 D 213/79; C09 K 19/34; C09 K 19/42; G02 F 1/13; G02 F 1/141

ABSTRACTED-PUB-NO: JP 07179856A

## BASIC-ABSTRACT:

Liq. crystal cpd. of formula (I) is new: R1-A1-X1-A2-X3-A3-R2 (where, R1,R2=F, CN or 1-20C alkyl with at least one -CH2- in the alkyl not having a vicinal hetero atom being opt. subst. by -O-, -S-, -CO-, -CH(CN)-, -CH=CH- or -C=C- and H('s) in the alkyl opt. subst. by F('s). A1,A2,A3 = single bond, 1,4-phenylene opt. subst. by 1-2 F('s), Cl('s), Br('s), CH3('s), CF3('s) or CN('s), pyridine-2,5-diyl, pyrimidine-2,5-diyl, pyrazine-2,5-diyl, pyridazine-3,5-diyl, 1,4-cyclohexylene, 1,3-dioxane-2,5-diyl, 1-3-dithiane-2,5-diyl, thiophene-2,5-diyl, thiazole-2,5-diyl, thiadiazole-2,5-diyl, benzoxazole-2,5-diyl, benzoazole-2,6-diyl, benzothiazole-2,5-diyl, benzothiazole-2,6-diyl, benzofuran-2,5-diyl, benzofuran-2,6-diyl, quinoxaline-2,6-diyl, quinoline-2,6-diyl, 2,6-naphthalene, indane-2,5-diyl, 2-alkylindane-2,5-diyl with the alkyl having 1-18C, indanone-2,6-diyl, 2-alkylindanone-2,6-diyl with the alkyl having 1-18C, cumarane-2,5-diyl, 2-alkylycumarane-2,5-diyl with the alkyl having 1-18C; at least one of A1,A2,A3 = benzofuran-2,5-diyl or benzofuran-2,6-diyl; X1,X2 = single bond, -COO-, -COO-, -COCO-, -CH2O-, -OCH2O-, -CH2CH2-. Also claimed are liq. crystal compsns. contg. the cpds., liq. crystal elements using the liq. crystal compsns., a display method using the liq. crystal compsns. and display devices using the liq. crystal elements.

USE - The liq. crystal elements are useful for liq. crystal displays and liq. crystal optical shutters.

ADVANTAGE - The liq. crystal compsns. have improved responsible to electric fields and the liq. crystal displays devices have a high response speed, small temp. dependence of the response speed and high contrast.